

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A radio cell station apparatus to which a plurality of personal stations can establish space division multiple access, one or more reference signals, optimized being defined for each multiplexed connection number of the personal stations establishing said space division multiple access to said radio cell station apparatus, being defined in said radio cell station apparatus, comprising:

a multiplexed connection number detection unit for detecting number of multiplexed connections of the personal stations establishing space division multiple access; and

a reference signal allocation unit for allocating, by switching the reference signals that have been allocated to the personal stations establishing space division multiple access respectively prior to change in the number of multiplexed connections to reference signals capable of maintaining communication quality even after the number of multiplexed connections is changed, the switched reference signals to said plurality of personal stations respectively, when change in the number of multiplexed connections is detected in said multiplexed connection number detection unit.

2. (Previously Presented) The radio cell station apparatus according to claim 1, further comprising a storage unit for storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein

when the number of multiplexed connections of the personal stations establishing space division multiple access is changed, said reference signal allocation unit selects reference signals optimal for the changed number of multiplexed connections from said storage unit and allocates the selected reference signals to said plurality of personal stations respectively.

3. (Previously Presented) The radio cell station apparatus according to claim 2, wherein

said reference signal stored in said storage unit is calculated for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic.

4. (Currently Amended) A personal station establishing space division multiple access to a radio cell station apparatus, one or more reference signals, optimized being defined for each multiplexed connection number of the personal station establishing said space division multiple access to said radio cell station apparatus, being defined in said radio cell station apparatus, comprising:

a receiving unit for receiving a request for switching a reference signal from said radio cell station apparatus in accordance with change in the number of multiplexed connections of the personal stations establishing space division multiple access; and

a switching unit for switching the reference signal to a reference signal capable of maintaining communication quality even after the number of multiplexed connections is changed and transmitting a response to the request for switching to said radio cell station apparatus.

5. (Previously Presented) The personal station according to claim 4, further comprising a storage unit for storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein

when the request for switching the reference signal is received from said radio cell station apparatus, a reference signal optimal for the changed number of multiplexed connections is selected from said storage unit and a response to the request for switching including the selected reference signal is transmitted to said radio cell station apparatus.

6. (Previously Presented) The personal station according to claim 5, wherein said reference signal stored in said storage unit is calculated for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic.

7. (Currently Amended) A method of controlling a reference signal performed by a radio cell station apparatus to which a plurality of personal stations can establish space division multiple access, one or more reference signals, optimized being defined for each multiplexed connection number of the personal stations establishing said space division multiple access to said radio cell station apparatus, being defined in said radio cell station apparatus, comprising the steps of:

detecting number of multiplexed connections of the personal stations establishing space division multiple access; and

when change in the number of multiplexed connections is detected in said step of detecting the number of multiplexed connections, switching the reference signals that have been allocated to the personal stations establishing space division multiple access respectively prior to change in the number of multiplexed connections to reference signals capable of maintaining communication quality even after the number of multiplexed connections is changed, and allocating the reference signals to said plurality of personal stations respectively.

8. (Original) The method of controlling a reference signal according to claim 7, further comprising the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein

when the number of multiplexed connections of the personal stations establishing space division multiple access is changed, reference signals optimal for the changed number of multiplexed connections that have been stored are selected and the selected reference signals are allocated to said plurality of personal stations respectively.

9. (Original) The method of controlling a reference signal according to claim 8, wherein

the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access further includes the step of calculating a reference signal for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic.

10. (Currently Amended) A method of controlling a reference signal performed by a personal station establishing space division multiple access to a radio cell station apparatus, one or more reference signals, optimized being defined for each multiplexed connection number of the personal station establishing said space division multiple access to said radio cell station apparatus, being defined in said radio cell station apparatus, comprising the steps of:

receiving a request for switching a reference signal from said radio cell station apparatus in accordance with change in the number of multiplexed connections of the personal stations establishing space division multiple access; and

switching the reference signal to a reference signal capable of maintaining communication quality even after the number of multiplexed connections is changed and transmitting a response to the request for switching to said radio cell station apparatus.

11. (Original) The method of controlling a reference signal according to claim 10, further comprising the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein

when the request for switching the reference signal is received from said radio cell station apparatus, a reference signal optimal for the changed number of multiplexed connections that has been stored is selected and a response to the request for switching including the selected reference signal is transmitted to said radio cell station apparatus.

12. (Original) The method of controlling a reference signal according to claim 11, wherein

the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access further includes the step of calculating a reference signal for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic.

13. (Currently Amended) A computer program embodied in a computer readable medium, for controlling a reference signal performed by a radio cell station apparatus to which a plurality of personal stations can establish space division multiple access, one or

more reference signals, optimized being defined for each multiplexed connection number of the personal stations establishing said space division multiple access to said radio cell station apparatus, being defined in said radio cell station apparatus, causing a computer to execute the steps of:

detecting number of multiplexed connections of the personal stations establishing space division multiple access; and

when change in the number of multiplexed connections is detected in said step of detecting the number of multiplexed connections, switching the reference signals that have been allocated to the personal stations establishing space division multiple access respectively prior to change in the number of multiplexed connections to reference signals capable of maintaining communication quality even after the number of multiplexed connections is changed, and allocating the reference signals to said plurality of personal stations respectively.

14. (Previously Presented) The computer program embodied in a computer readable medium, for controlling a reference signal according to claim 13, further causing the computer to execute the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein

when the number of multiplexed connections of the personal stations establishing space division multiple access is changed, reference signals optimal for the changed number of multiplexed connections that have been stored are selected and the selected reference signals are allocated to said plurality of personal stations respectively.

15. (Previously Presented) The computer program embodied in a computer readable medium, for controlling a reference signal according to claim 14, wherein

the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access further causes the computer to execute the step of calculating a reference signal for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic.

16. (Currently Amended) A computer program embodied in a computer readable medium, for controlling a reference signal performed by a personal station establishing space division multiple access to a radio cell station apparatus, one or more reference signals, optimized for being defined for each multiplexed connection number of the personal stations establishing said space division multiple access to said radio cell station apparatus, being defined in said radio cell station apparatus, causing a computer to execute the steps of:

receiving a request for switching a reference signal from said radio cell station apparatus in accordance with change in the number of multiplexed connections of the personal stations establishing space division multiple access; and

switching the reference signal to a reference signal capable of maintaining communication quality even after the number of multiplexed connections is changed and transmitting a response to the request for switching to said radio cell station apparatus.

17. (Previously Presented) The computer program embodied in a computer readable medium, for controlling a reference signal according to claim 16, further causing the computer to execute the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access, wherein

when the request for switching the reference signal is received from said radio cell station apparatus, a reference signal optimal for the changed number of multiplexed connections that has been stored is selected and a response to the request for switching including the selected reference signal is transmitted to said radio cell station apparatus.

18. (Previously Presented) The computer program embodied in a computer readable medium, for controlling a reference signal according to claim 17, wherein

the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access further causes the computer to execute the step of calculating a reference signal for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic.

19. (New) The radio cell station apparatus according to claim 1, wherein

an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner.

20. (New) The personal station according to claim 4, wherein
an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner.

21. (New) The method of controlling a reference signal according to claim 7,
wherein
an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner.

22. (New) The method of controlling a reference signal according to claim 10,
wherein
an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner.

23. (New) The computer program, embodied in a computer readable medium, for
controlling a reference signal according to claim 13, wherein
an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner.

24. (New) The computer program, embodied in a computer readable medium, for
controlling a reference signal according to claim 16, wherein
an optimal reference signal pattern for each multiplexed connection number is defined on condition that each signal for said personal station establishing space division multiple access can be separated and extracted in a stable manner.